

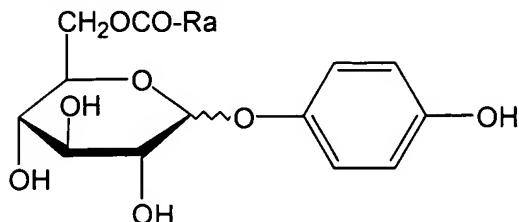
Int'l Appl. No. : PCT/JP2003/013018  
Int'l Filing Date : October 10, 2003

**AMENDMENTS TO THE CLAIMS**

**Please amend the Claims as follows. Insertions are shown underlined while deletions are ~~struck through~~.**

1 (original): An arbutin ester compound represented by formula (1):

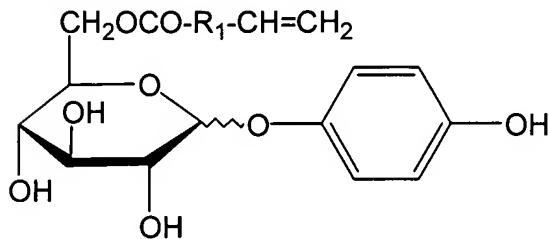
Formula (1)



wherein Ra is a hydrophobic group.

2 (original): An arbutin ester compound according to claim 1, which is represented by formula (2):

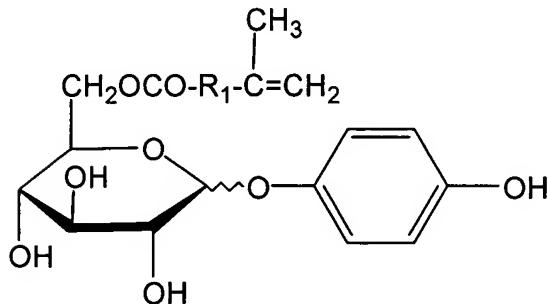
Formula (2)



wherein  $\text{R}_1$  is a single bond, an alkylene group or an arylene group.

3 (original): An arbutin ester compound according to claim 1, which is represented by formula (3):

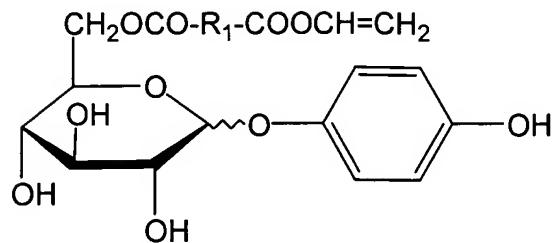
Formula (3)



wherein  $\text{R}_1$  is a single bond, an alkylene group or an arylene group.

4 (original): An arbutin ester compound according to claim 1, which is represented by formula (4):

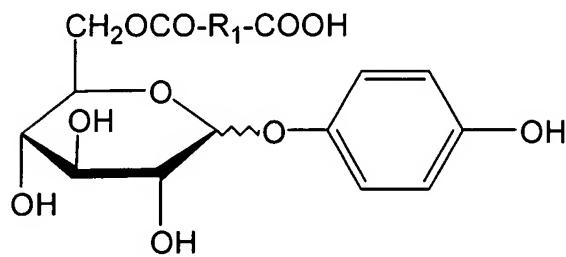
Formula (4)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

5 (original): An arbutin ester compound according to claim 1, which is represented by formula (5):

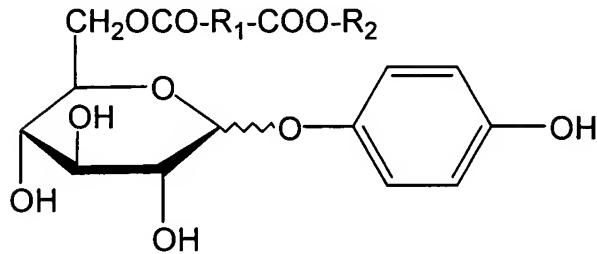
Formula (5)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

6 (original): An arbutin ester compound according to claim 1, which is represented by formula (6):

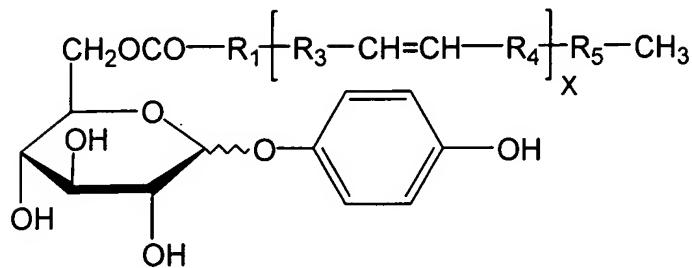
Formula (6)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group; and R<sub>2</sub> is an alkyl group or an aryl group.

7 (original): An arbutin ester compound according to claim 1, which is represented by formula (7):

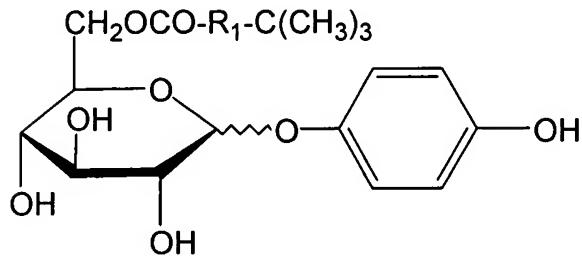
Formula (7)



wherein R<sub>1</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are each independently a single bond, an alkylene group or an arylene group; and X represents a number of repeating units and is 1 to 6.

8 (original): An arbutin ester compound according to claim 1, which is represented by formula (8):

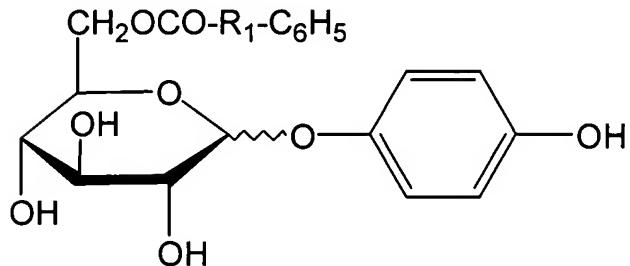
Formula (8)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

9 (original): An arbutin ester compound according to claim 1, which is represented by formula (9):

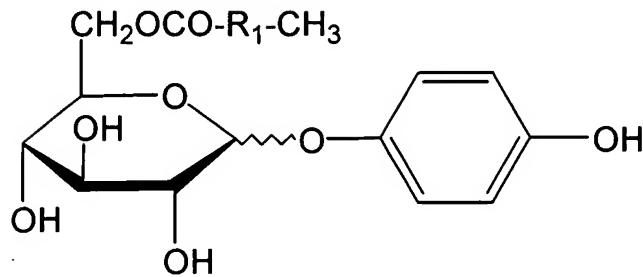
Formula (9)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

10 (original): An arbutin ester compound according to claim 1, which is represented by formula (10):

Formula (10)



wherein R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

11 (currently amended): A tyrosinase inhibitor comprising, as an active ingredient, at least one of the arbutin ester compounds according to claims 1 to 10.

12 (original): An external preparation for the skin, comprising the tyrosinase inhibitor according to claim 11.

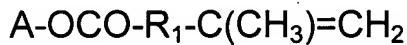
13 (original): A process for producing an arbutin ester compound, comprising the step of carrying out an esterification reaction of arbutin with a carboxylic acid compound represented by one of formulae (11) to (19):

Formula (11)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (12)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (13)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (14)



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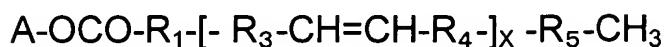
wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (15)



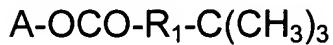
wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; R<sub>1</sub> is a single bond, an alkylene group or an arylene group; and R<sub>2</sub> is an alkyl group or an aryl group;

Formula (16)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; R<sub>1</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are each independently a single bond, an alkylene group or an arylene group; and X represents a number of repeating units and is 1 to 6;

Formula (17)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (18)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group;

Formula (19)



wherein A is hydrogen or a substituted or unsubstituted alkyl or vinyl group; and R<sub>1</sub> is a single bond, an alkylene group or an arylene group.

14 (original): The process according to claim 13, wherein the esterification is carried out in the presence of an enzyme catalyst.

15 (original): The process according to claim 13, wherein the esterification is carried out in the presence of a chemical catalyst.

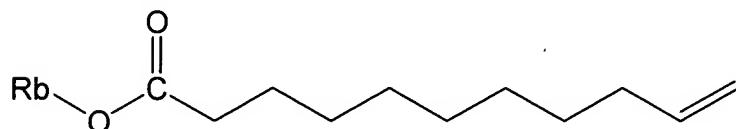
16 (original): The process according to claim 13, wherein the esterification is carried out while performing a dehydration treatment.

17 (original): The process according to claim 13, wherein the esterification reaction step is followed by the steps of:

extracting and isolating unreacted carboxylic acid derivative(s) from the esterification reaction mixture with a nonpolar organic solvent; and subsequently, adding excess water to extract and isolate unreacted arbutin and to precipitate the arbutin ester compound.

18 (original): A tyrosinase inhibitor comprising undecylenic acid, salt(s) thereof and/or ester derivative(s) thereof represented by formula (20):

Formula (20)



wherein Rb is hydrogen or a sugar residue derived by the removal of one hydroxyl group from a sugar.

19 (original): The tyrosinase inhibitor according to claim 18, wherein Rb is a sugar residue derived by the removal of one hydroxyl group from a sugar.

20 (original): The tyrosinase inhibitor according to claim 18, which comprises the undecylenic acid and/or salt(s) thereof wherein Rb is hydrogen.

21 (original): An external preparation comprising the tyrosinase inhibitor according to claim 18.

22 (original): The external preparation according to claim 21, which is a cosmetic preparation for skin whitening.

23 (original): A tyrosinase activity promoter comprising ascorbic acid and/or ascorbic acid derivative(s) as an active ingredient.

24 (original): A tyrosinase activity promoter according to claim 23, wherein the ascorbic acid derivative(s) is at least one member selected from the group consisting of ascorbic acid fatty

acid esters; ascorbic acid phosphoric acid esters, fatty acid esters thereof and salts of the phosphoric acid esters and fatty acid esters; ascorbic acid glucosides and fatty acid esters thereof; and ascorbic acid sulfuric acid esters, fatty acid esters thereof, and salts of such sulfuric acid esters and fatty acid esters.

25 (original): An external preparation comprising the tyrosinase activity promoter according to claim 23.

267 (original): An external preparation according to claim 25, which is an external preparation for the hair.

27 (original): An external preparation according to claim 25, which is an external preparation for the skin.

28 (original): An external preparation according to claim 25, wherein the total content of ascorbic acid and ascorbic acid derivative(s) is 0.00001 to 10 wt.% in the whole external preparation.

29 (original): An external preparation according to claim 25, wherein the tyrosinase activity promoter comprises ascorbic acid as an active ingredient, and wherein the content of ascorbic acid is 0.0001 to 1 wt.% in the whole external preparation.

30 (original): An external preparation according to claim 25, wherein the tyrosinase activity promoter comprises, as an active ingredient, at least one compound selected from the group consisting of ascorbic acid phosphoric acid esters and ascorbic acid glucosides, and wherein the content of said at least one compound is 0.001 to 10 wt.% in the whole external preparation.

31 (original): An external preparation according to claim 25, wherein the tyrosinase activity promoter comprises, as an active ingredient, at least one compound selected from the group consisting of fatty acid esters of ascorbic acid, fatty acid esters of ascorbic acid phosphoric acid esters and fatty acid esters of ascorbic acid glucosides, and wherein the content of said at least one compound is 0.00001 to 0.1 wt.% in the whole external preparation.

32 (original): The process for producing an ester, comprising esterifying hydroxyl-containing compound(s) with fatty acid(s) or derivative(s) thereof in the presence of *Candida antarctica*-derived lipase type A in an aprotic organic solvent.

33 (original): The process according to claim 32, wherein the aprotic organic solvent is selected from the group consisting of dimethylformamide, dimethylsulfoxide, and mixtures of dimethylformamide and dimethylsulfoxide.

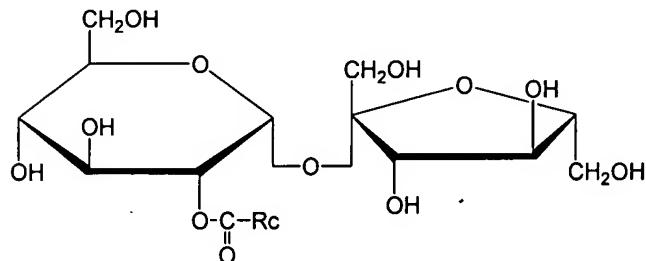
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34 (original): The process according to claim 32, wherein the hydroxyl-containing compound(s) is at least one member selected from the group consisting of saccharides, nucleosides, sugar alcohols and hydroxyl-containing amino acids.

35 (original): The process according to claim 34, wherein the hydroxyl-containing compound is a saccharide.

36 (original): The process according to claim 32, wherein the hydroxyl-containing compound is sucrose, and wherein the ester is a compound represented by formula (21).

Formula (21)



wherein Rc is a C<sub>1-24</sub> fatty acid residue.